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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,858	03/04/2004	Shunichi Narumi	520.39873VX1	3756

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EXAMINER

WATKO, JULIE ANNE

ART UNIT PAPER NUMBER

2652

DATE MAILED: 08/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/791,858

Applicant(s)

NARUMI ET AL.

Examiner

Julie Anne Watko

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3,4,6,8-10,12 and 14-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 3,4,6,8-10,12 and 14-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/811,437.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file for parent application SN 09811437.

Claim Rejections - 35 USC § 112

2. Claims 3-4, 6, 8-10, 12 and 14-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. Claim 3 recites the limitation “the magnetic pole end layer” in line 3. There is insufficient antecedent basis for this limitation in the claims.
- b. Claim 4 recites the limitation “a magnetic gap layer” in lines 1-2. It is unclear whether said gap layer is made of a magnetic material or of a non-magnetic material.
- c. Claim 4 recites the limitation “non-magnetic layer formed in a region such that at least the magnetic gap layer is moved away from the air bearing surface” in lines 3-4. This limitation is misdescriptive of the specification. The head is mechanically static, such that the gap does not move with respect to the air bearing surface.
- d. Claim 9 recites the limitation “said magnetic pole tip layer comprises three layers of magnetic layer/non-magnetic layer/magnetic layer.” It is unclear whether said “non-magnetic layer” is the same as the gap layer of claim 4, line 2.
- e. Claim 14 recites the limitation “higher than that of any one of at least the upper magnetic core and the lower magnetic core” in lines 2-3. Due to the use of open

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language, it is unclear what other layers are included in this group; thus, the metes and bounds of the claim are impossible to determine.

f. Claim 15 recites the limitation “the magnetic pole layer” in line 7. There is insufficient antecedent basis for this limitation in the claims.

g. Claim 16 recites the limitation “the magnetic disk apparatuses” in line 2. There is insufficient antecedent basis for this limitation in claim 3, from which claim 16 depends.

h. Claim 16 recites the limitation “the write head” in line 3. There is insufficient antecedent basis for this limitation in the claims. Furthermore, it is unclear whether the array apparatus has one and only one write head, or whether each magnetic disk apparatus contains at least one write head.

3. Regarding claim 4 and its dependent claims 6 and 9-10, and claim 16: In the absence of a reasonably definite interpretation of a claim, it is improper to rely on speculative assumptions regarding the meaning of a claim and then base a rejection under 35 U.S.C. 103 on these assumptions (*In re Steele*, 305 F.2d 859, 134 USPQ 292 (CCPA 1962)). See MPEP 2143.03. Prior art will not be applied to these references until they become reasonably clear and definite.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 3 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Barr et al (US Pat. No. 6657816 B1).

As recited in claim 3, to the extent understood, Barr et al show an inductive head comprising a lower magnetic core 85 formed on a substrate 82, a magnetic pole tip layer (including 96) formed on the lower magnetic core, an upper magnetic core 104 coupled in its front end (upper end in Fig. 3A; left end in Fig. 4) to the magnetic pole end layer, coupled in its rear end (right end in Fig. 4) to the lower magnetic core, having a width of the front end smaller than that of the rear end (see Fig. 3A), and having at least partially a shape gradually reducing the width from the rear end to the front end (see Fig. 3A), coils 94A disposed around between the upper magnetic core and the lower magnetic core, and an insulating layer (95 or 112, for example) formed between the coils and the upper magnetic core or the lower magnetic core, wherein the distance between the upper magnetic core 104 and the lower magnetic core 85 in a rear end region (rightward of “ZERO THROAT LEVEL” in Fig. 4) away from a air bearing surface in a region connecting the magnetic pole tip layer to said upper magnetic core is shorter than the distance between the top surface of said magnetic pole tip layer (including 96) in the air bearing surface (“ABS LEVEL”, see Fig. 4) and said lower magnetic core 85.

As recited in claim 8, to the extent understood, Barr et al show that said magnetic pole tip layer comprises three layers (including 90, 114 and 96) of magnetic layer/non-magnetic layer/magnetic layer.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barr et al (US Pat. No. 6657816 B1).

As recited in claim 12, Barr et al are silent regarding whether the front end of said upper magnetic core is recessed from the air bearing lifting surface by 0.2 to 3.0 pm.

It is notoriously old and well known in the magnetic head art to routinely modify a magnetic head structure in the course of routine optimization/ experimentation and thereby obtain various optimized relationships including those set forth in claim 12.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the magnetic head of Barr et al satisfy the relationships set forth in claim 12. The rationale is as follows: one of ordinary skill in the art would have been motivated to have had the magnetic head of Barr et al satisfy the relationships set forth in claim 12 since it is notoriously old and well known in the magnetic head art to routinely modify a

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magnetic head structure in the course of routine optimization /experimentation and thereby obtain various optimized relationships including those set forth in claim 12. Moreover, absent a showing of criticality (i.e., unobvious or unexpected results), the relationships set forth in claim 12 are considered to be within the level of ordinary skill in the art.

Additionally, the law is replete with cases in which when the mere difference between the claimed invention and the prior art is some range, variable or other dimensional limitation within the claims, patentability cannot be found.

It furthermore has been held in such a situation, the Applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Moreover, the instant disclosure does not set forth evidence ascribing unexpected results due to the claimed dimensions. See *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338 (Fed. Cir. 1984), which held that the dimensional limitations failed to point out a feature which performed and operated any differently from the prior art.

As recited in claim 15, Barr et al show a magnetic disk apparatus (see Fig. 1) comprising a magnetic recording media 14, a motor 15 driving the same, a magnetic head 35 for read and write onto the magnetic recording media, and a mechanism 12 for positioning the magnetic head, wherein at least one inductive head according to claim 3 is mounted as the write head.

As recited in claim 15, Barr et al are silent regarding the claimed pole tip width, and the claimed ranges of saturation magnetic flux density and coercivity.

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It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the magnetic disk apparatus of Barr et al satisfy the values and ranges set forth in claim 15. The rationale is as follows: one of ordinary skill in the art would have been motivated to have had the magnetic head of Barr et al satisfy the relationships set forth in claim 15 since it is notoriously old and well known in the magnetic disk apparatus art to routinely modify a magnetic head structure in the course of routine optimization/experimentation and thereby obtain various optimized relationships including those set forth in claim 15. Moreover, absent a showing of criticality (i.e., unobvious or unexpected results), the values and ranges set forth in claim 15 are considered to be within the level of ordinary skill in the art.

Additionally, the law is replete with cases in which when the mere difference between the claimed invention and the prior art is some range, variable or other dimensional limitation within the claims, patentability cannot be found.

It furthermore has been held in such a situation, the Applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Moreover, the instant disclosure does not set forth evidence ascribing unexpected results due to the claimed values and ranges. See *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338 (Fed. Cir. 1984), which held that the dimensional limitations failed to point out a feature which performed and operated any differently from the prior art.

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barr et al (US Pat. No. 6657816 B1) in view of Yoda et al (US Pat. No. 5872693).

As recited in claim 14, Barr et al are silent regarding whether the saturation magnetic flux density of the magnetic pole tip layer is higher than that of any one of the upper magnetic core and the lower magnetic core.

As recited in claim 14, to the extent understood, Yoda et al teach that saturation magnetic flux density of a magnetic pole tip layer is higher than that of any one of the upper magnetic core and the lower magnetic core (see col. 21, line 66-col. 22, line 15, "By using a material having a higher saturation flux density or a material having a larger anisotropy of induced magnetism for the front body 16a of the magnetic pole, for example, the recording on a magnetic recording medium of high coercive force can be facilitated and the thickness of the magnetic layer in the front part can be decreased. As a result, the desire to diminish the amount of side fringing can be satisfied.").

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a higher saturation flux magnetic material for the pole tip than for the cores of Barr et al as taught by Yoda et al. The rationale is as follows: one of ordinary skill in the art would have been motivated to use a higher saturation flux magnetic material for the pole tip than for the cores in order to diminish side fringing as taught by Yoda et al (see col. 21, line 66-col. 22, line 15).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mino et al (US Pat. No. 6169642 B1) show a thin film magnetic head comprising cores 41-48 and pole tip layer (including 44, 45 and 46). Emilio Santini (US PAP No. 2002/0191350 A1) shows an inductive head comprising cores ("P1" and "P2 YOKE") and pole

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tip (including "P2 TIP"). Sato et al (US PAP No. 2002/0080523 A1) show an inductive head comprising core 35 and pole tip 24. Sasaki (US Pat. No. 6680815 B2) shows a thin film magnetic head comprising pole tip (including 15a) and magnetic core (including 20a-c; see especially Figs. 6A and 12). Santini (US Pat. No. 6612017 B2) shows an inductive write head comprising pole tip "P2" and core "P2 YOKE". Barr (US Pat. No. 6490125 B1) shows an inductive write head (see Fig. 5).

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie Anne Watko whose telephone number is (703) 305-7742. The examiner can normally be reached on Monday-Thursday, 9AM-5PM, Friday 9AM-7:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Julie Anne Watko
Primary Examiner
Art Unit 2652

August 19, 2004
JAW

